Consulting Team Status Update

Massachusetts Net Metering Task Force
Mtg #3 - January 6, 2015

PEREGRINE ENERGY GROUP

Sustainable Energy Advantage, LLC

MEISTER CONSULTANTS GROUP

La Capra Associates

Overview

- Task 0 – Focus Group Interviews, Status Update
- Task 1 – Solar Incentive Policy Summaries, Status Update
- Task 2 - Solar Development in States without Solar Incentive Policies, Preliminary Results
- Task 3 - Analyze Costs & Benefits of MA Net Metering and Solar Incentive Policy
- Q&A

TASK 0

FOCUS GROUP INTERVIEWS, STATUS UPDATE

Task 0: Task Force Focus Groups

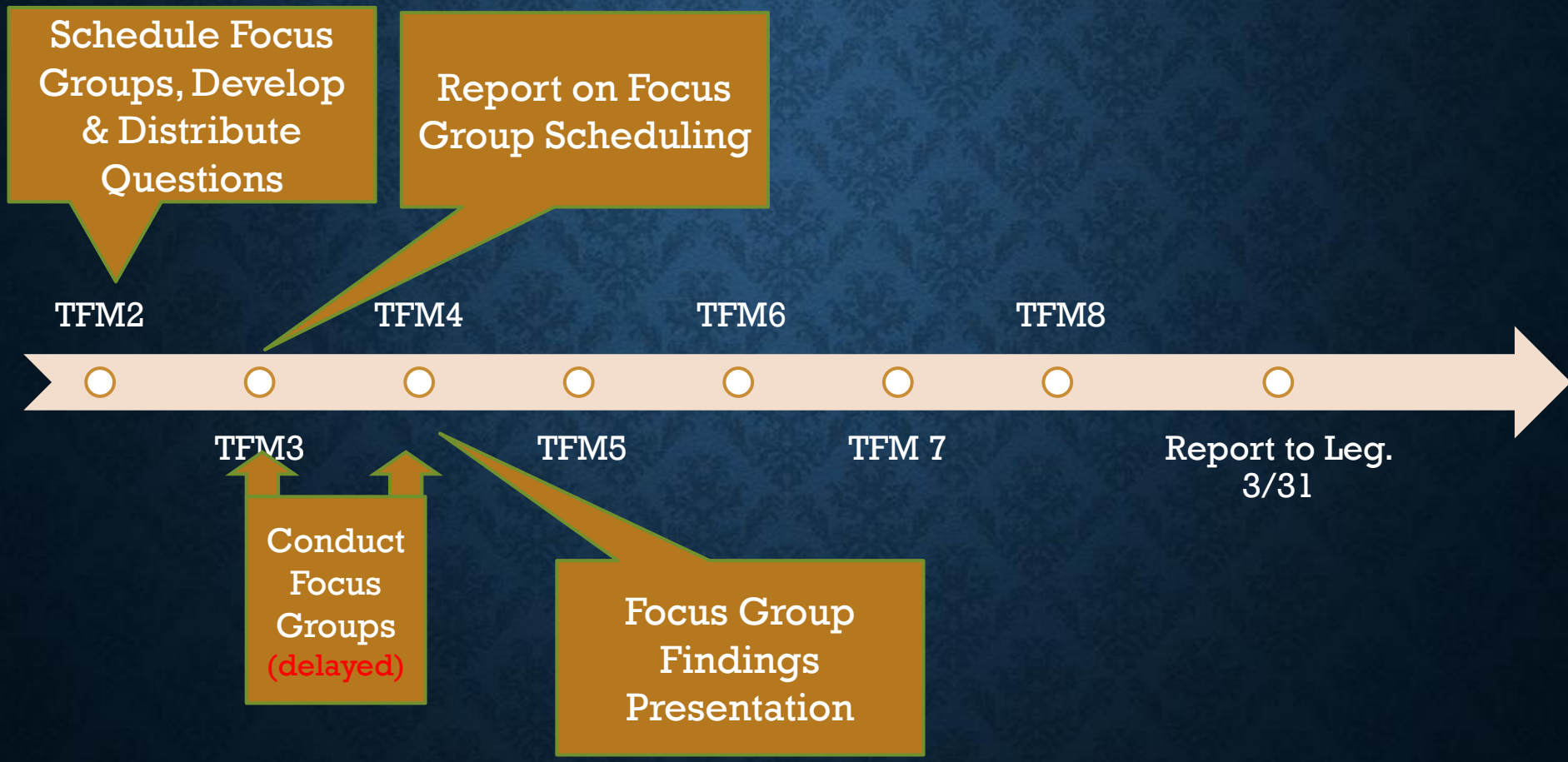
- Six 1.5 hr phone focus group sessions
- Scheduling = slow going
  - *If you haven't responded, please speak to Bob after meeting*
- Groups A, B, D & F scheduled so far
  - Starting tomorrow
  - C & E ➔ need response from 1 more each
- Questions distributed today
  - Supplemental written responses OK up to 3 days later, *only if points not conveyed in focus groups*

A	Utilities and Load Serving Entities
B	Utility Customers and Customer Advocates
C	Solar Industry Representatives & IBEW
D	Legislators
E	Task Force Chairs
F	*Other: Market Makers, Finance, Competitive Suppliers, Solar Research Orgs*

Task 0: Task Force Focus Group Interview Topics

- Priorities for the Task Force process
- Long-term goals for Mass. solar market
- Perspectives on current net metering approach
- Perspectives on current solar market model
- Perspectives on other solar incentive models
- Perspectives on future use of net metering, min. bill provisions
- Perspectives on policy transitions
- *Sector-specific* inquiries incl. specific requests to aid analysis

TASK 0: TASK FORCE FOCUS GROUPS



TASK 1

SOLAR INCENTIVE POLICY SUMMARIES, STATUS UPDATE

Task 1: Solar Incentive Policy Summaries

Policies and States to be Reviewed:

- California RE-MAT, RAM and declining block
- NYSERDA declining block program and solicitation program
- Rhode Island Renewable Energy Growth
- Delaware long-term contracting
- Connecticut ZREC
- New Jersey utility financing, ownership, & long-term contracting
- Vermont SPEED
- 'Value of Solar' Tariffs

Summary Outline (1 of 2)

1. Introduction
   - Overview of the policy
   - Context:
     - Electric market structure, RE policy environment
     - Historical policy review
   - Objectives of policy of interest:
     - Qualitative and quantitative
   - Policy timeline

2. Policy Description
   - Incentive type (PBI, Rebate, etc.) and structure
   - Administration, eligibility, segmentation
   - Incentive setting mechanism
   - Summary of current rates or incentive levels (if available)
   - Mechanism to change incentives over time

Summary Outline (2 of 2)

3. Key Interactions:
    - RPS and other (rebates/SBC, net metering, tax incentives)

4. Impact and Observations:
    - Penetration, market size, market trends
    - Market interest and diversity
    - Competitive characteristics
    - Project success/failure rates
    - Market stability
    - Summary observations and lessons learned

TASK 2

SOLAR DEVELOPMENT IN STATES WITHOUT SOLAR INCENTIVE POLICIES

Task 2: Solar Development in States w/o Incentives

- Review of market development in states without solar incentives or net metering
- Review of market development in states with net metering, but modest solar incentives
- Review of select recent publicly announced utility scale solar projects

Task 2: Key Findings

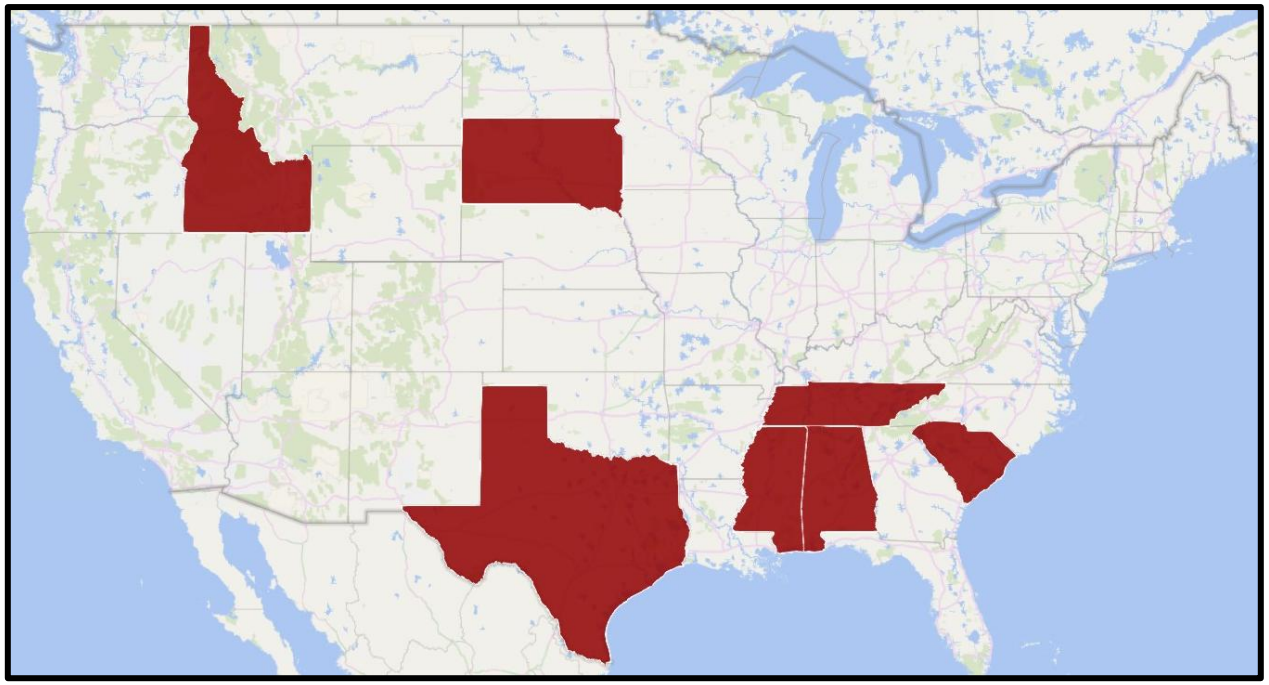
- Solar market development has been limited in the few states without net metering

- Among states that have net metering, states with other solar incentive policies, such as RPS carve outs, have more robust solar market activity

- In some states without major incentive programs, mega-utility-scale PV systems have been announced with long-term contract rates that suggest competitiveness with traditional generation technologies. (Few apparent similarities with MA context)

States without State-Wide Net Metering

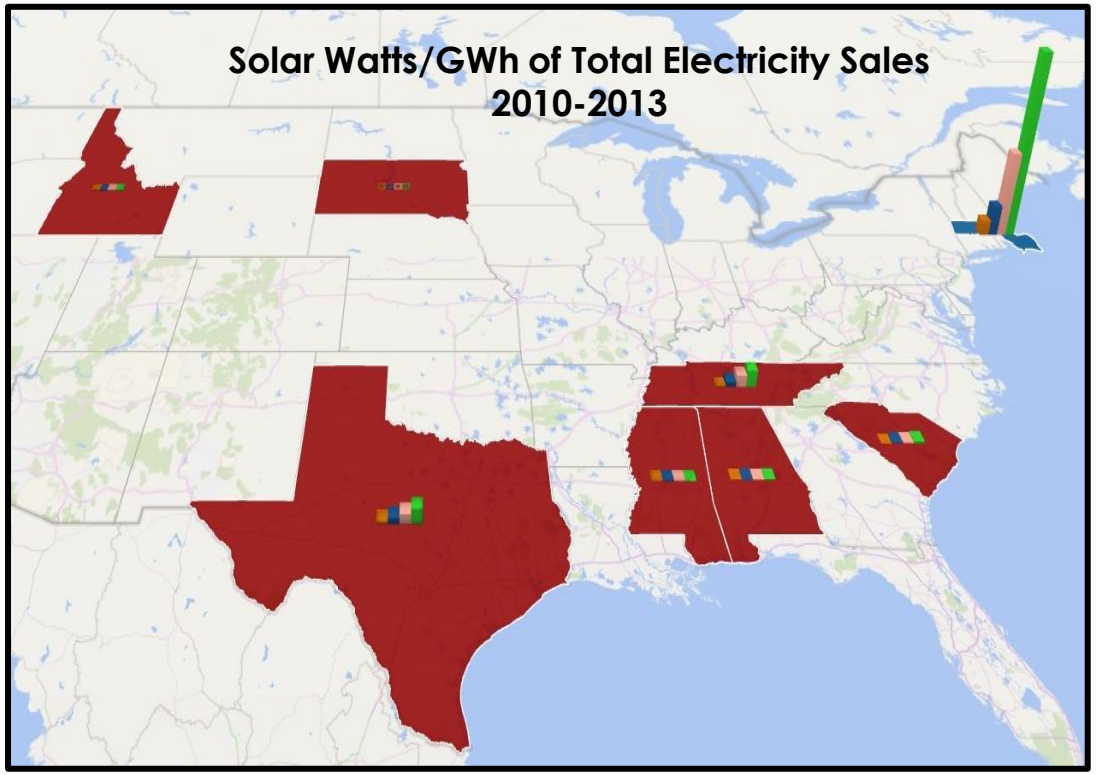
States w/o Net Metering
Idaho
Nebraska
Texas
Tennessee*
Alabama
Mississippi
South Carolina**



* TVA has a solar program that has supported some development in the state
** South Carolina recently passed state-wide net metering in Dec. 2014

Solar Market Development in States w/o Net Metering Compared to Mass.

State	2013 Cumulative MW	2013 W/GWh Electricity Sales
ID	0.7	29
SD	0	0
TX	215.9	587
TN	64.8	675
AL	1.9	22
MS	0.3	6
SC	8.0	101
MA	**445.0**	**8,167**



La Capra

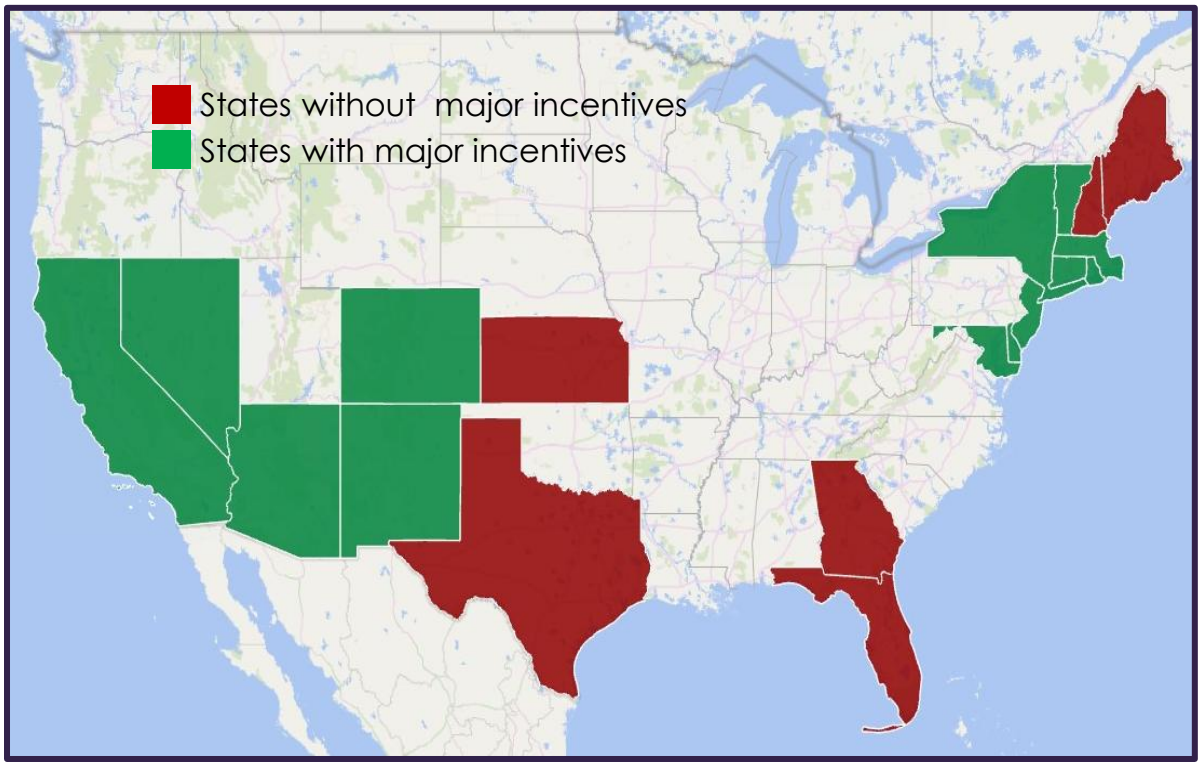
States with Insolation + Retail kWh Values Similar to Massachusetts

- Estimated average retail value of solar production per watt based on:
  - State average solar capacity factor (NREL)
  - Average 2008-2012 retail energy price per kWh (EIA)
- Hypothetical average retail revenue ranged:
  - $206 per kilowatt in CA
  - $77 per kW in WA
- Massachusetts ranked 5th at $172 per kilowatt

Average Annual Retail Electricity Value of 1kW of Solar Production			
State	$/kW	State	$/kW
CA	$206	MD	$158
CT	$204	NV	$155
NY	$184	VT	$149
NJ	$181	ME	$147
MA	**$172**	NM	$144
NH	$169	FL	$144
RI	$169	CO	$139
DE	$165	TX	$135
DC	$163	GA	$134
AZ	$162	KS	$120

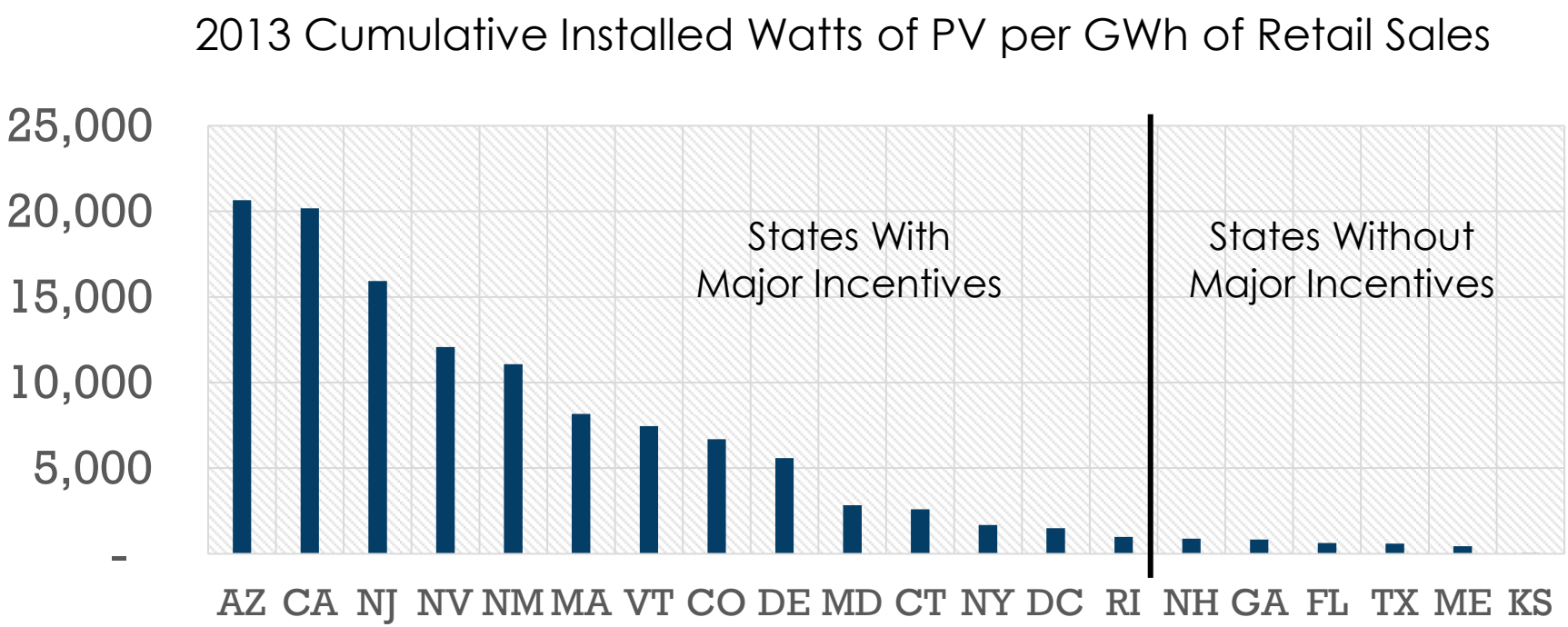
Major Solar Incentive Programs in States Similar to Massachusetts

State	Major Incentive	State	Major Incentive
CA	Yes	MD	Yes
CT	Yes	NV	Yes
NY	Yes	VT	Yes
NJ	Yes	ME	No
MA	**Yes**	NM	Yes
NH	No	FL	No
RI	Yes	CO	Yes
DE	Yes	TX	No*
DC	Yes	GA	No*
AZ	Yes	KS	No



* Individual utilities have incentive programs, but not state-wide incentives

Solar in States with and w/o Major Incentives



Recent NREL Analysis

- NREL recently published a comprehensive analysis of state-level solar market development.[1] Key findings included:
  - Solar development more robust in states with best-practice interconnection and net metering policies although these policies alone are typically insufficient to spur market growth
  - Solar set-asides (i.e. RPS carve outs) are important to fostering solar market growth
  - Policies that foster Third Party Ownership (TPO) are also important drivers of solar market development

1. Steward, D., and Doris, E. (2014), *The Effect of State Policy Suites on the Development of Solar Markets*. National Renewable Energy Laboratory. NREL/TP-7A40-62506

Recent Utility-Scale Solar Announcements

Utility	System Size	Notes
Austin Energy (Texas)	150 MW	Less than $0.05 per kWh for 20 year PPA
Rocky Mountain Power (Utah)	More than 500 MW	Some qualified as PURPA avoided cost long-term generators (may include state tax credit)
Kentucky Utilities Co. and Louisville Gas & Electric Co. (Ky.)	10 MW	Authorized as part of gas plant construction. Approved, in part, as hedge against future CO2 regulation

Task 2: Key Findings

- Solar market development has been limited in the few states without net metering

- Among states that have net metering, states with other solar incentive policies, such as RPS carve outs, have more robust solar market activity

- In some states without major incentive programs, mega-utility-scale PV systems have been announced with long-term contract rates that suggest competitiveness with traditional generation technologies. (Few apparent similarities with MA context)

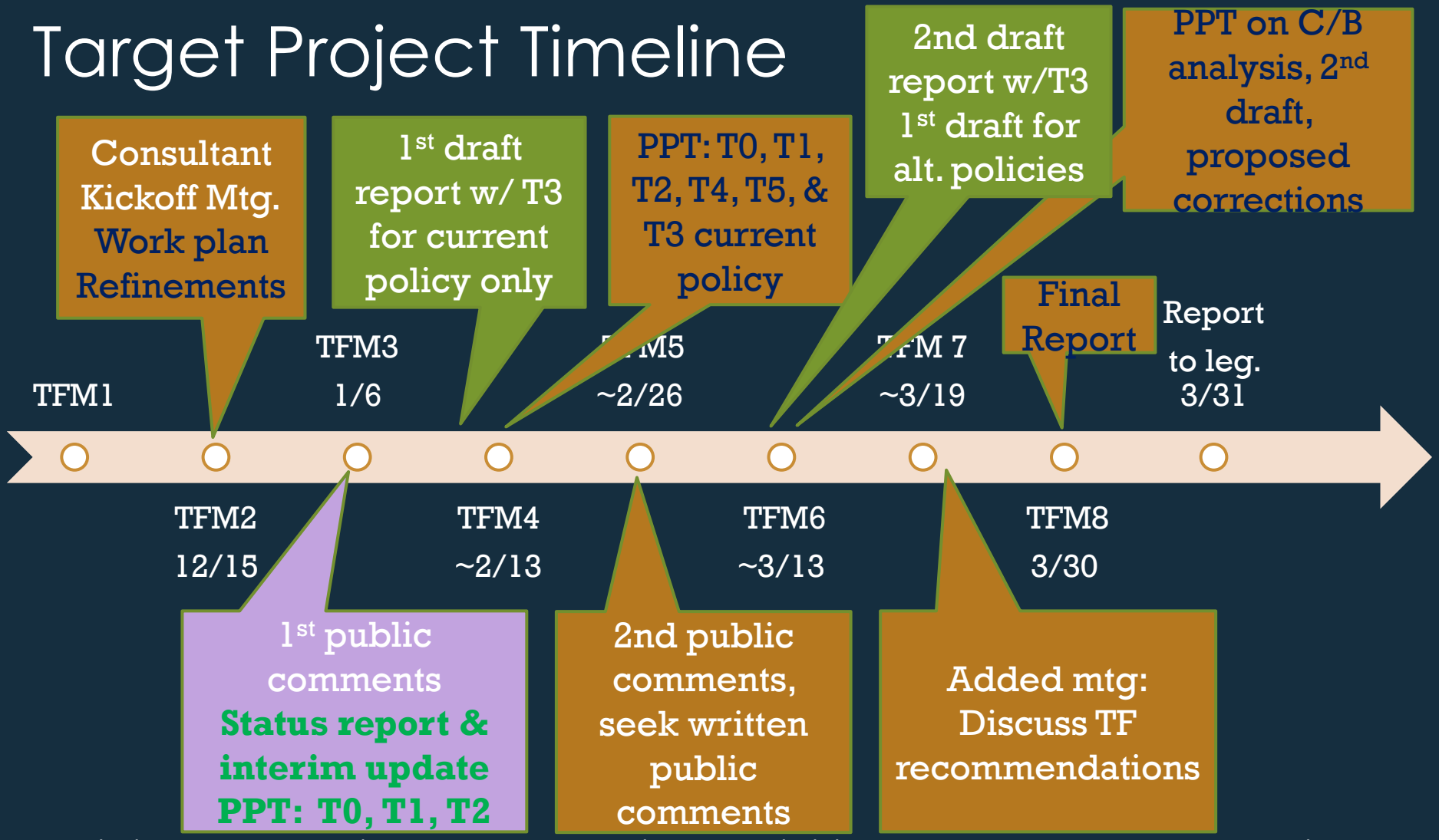
TASK 3

ANALYZE COSTS & BENEFITS OF MA NET METERING AND SOLAR INCENTIVE POLICY

Task 3: Status Update

- Analysis of current policy suite to commence this week
  - *We may be reaching out with research questions or data requests in near future*
- Analysis of alternative policies to follow Task 4

Target Project Timeline



- Vigilance required to streamline activities ➔ hard report deadline

Q & A